

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

MASSACHUSETTS INSTITUTE OF)
TECHNOLOGY)

Plaintiff,

VS.

HARMAN INTERNATIONAL
INDUSTRIES, INCORPORATED

Defendant.

Civil Action No. 05-10990-DPW

District Judge Douglas P. Woodlock

Magistrate Judge Judith G. Dein

HARMAN'S MEMORANDUM IN SUPPORT OF ITS PROPOSED CLAIM CONSTRUCTIONS

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I. INTRODUCTION

In the two years leading up to this litigation, and then throughout the two years since filing its Complaint, MIT's allegations against Harman have been constantly changing, as MIT has periodically asserted and withdrawn various charges of infringement of at least 48 of the 58 claims of United States Patent No. 5,177,685 (the "'685 patent").¹ From Harman's initial meeting with MIT on December 13, 2003, Harman has demonstrated a *prima facie* case of non-infringement and/or invalidity of each claim of the '685 patent, as it is properly construed. Most recently, and just earlier this month, MIT abandoned its assertions of all but three claims in the '685 patent – claims 1, 42, and 45.²

The parties recently met and conferred to streamline the claim construction issues to be submitted to this Court. For each of the five disputed terms in claim 1 and the one disputed term in claim 45,³ Harman's proposed constructions are supported by the intrinsic evidence, including the claim language itself, the specification, and the prosecution history.⁴ And Harman's claim constructions follow the most recent, controlling Federal Circuit precedent. MIT's proposed constructions, on the other hand, ignore the intrinsic evidence, contradict MIT's own admissions as to the proper construction and scope of the claims, and are merely self-serving attempts to re-write the claims in a final effort to cobble together a case for its last three remaining claims.

¹ See, e.g., Ex. A (asserting four claims of the '685 patent against Harman's customer, Porsche, on March 24, 2003, and also asserting another patent, for which MIT never filed suit) (Exhibit A will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal); Ex. B (asserting 17 claims against Harman on November 4, 2005); Ex. C (asserting 48 claims on February 15, 2006); Ex. D (dropping all but six claims on March 2, 2007); Ex. E (dropping all but claims 1, 42, and 45 on March 19, 2007).

² See Ex. E. Tellingly, neither claim 42 nor claim 45 was asserted in MIT's mandatory, court-ordered, November 4, 2005 Disclosure of Asserted Claims. Ex. B.

³ The parties agree that nothing in claim 42 needs to be construed, and that the claim should be given its plain and ordinary meaning.

⁴ See Ex. CC (comparison of the parties' respective proposed claim constructions").

Accordingly, MIT's proposed constructions should be rejected, and this Court should adopt each of Harman's proposed constructions for the disputed terms of the '685 patent.

II. BACKGROUND OF THE PATENT IN SUIT

MIT filed a patent application on August 9, 1990, that later issued as the '685 patent on January 5, 1993. Ex. F, '685 patent. The patent resulted from a graduate research project, called the Back Seat Driver, which the named inventors, an MIT graduate student, Jim Davis, and his faculty advisor, Chris Schmandt, began working on in early 1988. Ex. G; Ex. H at 29:10-21 (Exhibit H will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal). In fact, the specification of the '685 patent largely consists of Davis' thesis, titled "Back Seat Driver: voice assisted automobile navigation." Ex. I. MIT incorporated Davis' thesis into the '685 patent's specification by reference and, as such, Davis' thesis is intrinsic evidence for the purposes of claim construction. The Back Seat Driver, in turn, grew out of Davis' earlier work, called Direction Assistance, that took place between 1985 and late 1987 or early 1988. Ex. H at 29:10-21; Ex. J.

A. Davis' Direction Assistance Project

Direction Assistance ("DA") was a stand-alone (*i.e.*, not installed in an automobile) system in which a user telephoned the system and received detailed, spoken driving instructions from one place to another in the Boston area. Ex. K at Abstract. DA generated spoken directions from a starting point to a destination, with the expectation that the user would write them down in advance of starting her trip. *Id.* Drivers using DA could input both the starting location and the desired destination using a telephone keypad. *Id.*; Ex. G at 2. The DA system generated routes using a detailed map database, of the Boston area. Ex. K at 2-3; Ex. L at 218:22-219:2, 221:9-222:6 (Exhibit L will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal). DA calculated routes from a starting point to a

destination, using computerized route finder and various algorithms. Ex. K at 1; Ex. L at 225:5-23. DA generated speech using an off-the-shelf, computerized speech synthesizer, called “DecTalk,” which delivered the spoken instructions to the user through the telephone. *Id.* at Abstract; Ex. G at 6-7; Ex. L at 207:8-16.

Like the Back Seat Driver, DA generated “discourse” even though its route and instructions were generated before navigation began, and even though they were “static” in the sense that they did not change during subsequent navigation of the route. Mr. Schmandt, a named inventor who considers himself an expert in computational linguistics, admitted as much during his deposition. Ex. H at 148:20-24 (confirming that DA generated discourse by noting that he had contributed “various aspects of the discourse generation” in DA), 268:3-5 (“Q: Did the DA device generate discourse? A: Yes.”). Emails exchanged between the inventors also confirm that DA generated discourse. Ex. M (Email from Davis (“jrd@mit.edu”) to Schmandt (“geek@mit.edu”): “I think you’re also right that there will be some discourse structure and prosody [in Back Seat Driver], though I still think there will be less than in DA [Direction Assistance]”) (Exhibit M will be submitted later pursuant to Harman’s previously filed Assented-To Motion to File Under Seal). Even MIT’s expert witness on linguistics agrees that Direction Assistance generated “discourse.” Ex. N at 255:14-256:4 (Exhibit N will be submitted later pursuant to Harman’s previously filed Assented-To Motion to File Under Seal).

B. Davis and Schmandt’s Back Seat Driver Project

The Back Seat Driver incorporated several aspects of the DA, including, in some form or another, at least what the patent calls the computing apparatus, input means, map database, route finder, discourse generator, speech generator, and voice apparatus. *See generally* Ex. K; *see also* Ex. L at 205:11-207:24; Ex. H at 268:3-269:10, 283:5-11. Unlike DA, the Back Seat Driver was to be used in a moving automobile. As a result, the Back Seat Driver needed to add position

sensors and a location system in order for the Back Seat Driver to determine where the automobile was located. For the Back Seat Driver, the project's sponsor, NEC, provided Davis and Schmandt with a position sensing apparatus and location system. Ex. H at 151:19-153:20; Ex. L 93:12-20. Davis and Schmandt were not involved, in any way, in the design and implementation of NEC's location system, which was a well-known system described by NEC in a 1988 printed publication. Ex. L at 93:12-20; Ex. O.

At the time that Davis and Schmandt were working on the Back Seat Driver, it was their understanding that "there [were] reports of earlier navigation systems using speech," but they were supposedly (and, if so, incorrectly) under the belief that "none [of the earlier navigation systems using speech were] described in the literature." Ex. I at 16, n.2. Accordingly, MIT believed at the time of invention that the Back Seat Driver "differs from previous navigation assistance programs by using speech to give directions, instead of drawing a map or displaying symbols." *Id.* at p. 16.

III. THE CLAIMS AT ISSUE, THE ISSUES FOR THE COURT, AND HARMAN'S PROPOSED CONSTRUCTIONS

MIT asserts against Harman claims 1, 42, and 45 of the '685 patent. Claim 1 is the sole independent claim of the '685 patent; the remaining 57 claims (including asserted claims 42 and 45) depend from claim 1. The asserted claims read as follows, with disputed terms in bold:

Claim 1:

1. An automobile navigation system which produces spoken instructions to direct a driver of an automobile to a destination in real time comprising:

computing apparatus for running and coordinating system processes,

driver input means functionally connected⁵ to said computing apparatus **for entering data into said computing apparatus, said data including a desired destination,**

a map database functionally connected to said computing apparatus **which distinguishes between physical and legal connectivity,**

position sensing apparatus installed in the automobile and functionally connected to said computing apparatus for providing said computing apparatus data for determining the automobile's current position,

a location system functionally connected to said computing apparatus for accepting data from said position sensing apparatus, **for consulting said map database,** and for determining the automobile's current position relative to the map database,

a route-finder functionally connected to said computing apparatus, for accepting the desired destination from said driver input means and the current position from said location system, **for consulting said map database,** and for computing a route to the destination,

a discourse generator functionally connected to said computing apparatus for accepting the current position from said location system and the route from said route finder, **for consulting said map database,** and **for composing discourse** including instructions and other messages for directing the driver to the destination from the current position,

a speech generator functionally connected to said discourse generator **for generating speech from said discourse provided by said discourse generator,** and

voice apparatus functionally connected to said speech generator for communicating said speech provided by said speech generator to said driver.

Claim 42:

42. The automobile navigation system of claim 1 wherein each intersection in a route is classified into one type in a taxonomy of intersection types, and the discourse generated in relation to each said intersection depends on its type.

Claim 45:

45. The automobile navigation system of claim 1 wherein said discourse generated comprises a long description of an act given substantially before the act is to be performed and a short description given **at the time the act is to be performed.**

The claim construction issues for the Court along with Harman's proposed constructions are summarized as follows:

⁵ The parties also dispute the proper construction of the phrase "functionally connected to" that appears throughout claim 1. For clarity, however, that phrase is not highlighted in bold.

Claim 1

“driver input means...for entering data into said computing apparatus, said data including a desired destination”

Agreed Construction: The parties agree that “driver input means” is a § 112 ¶ 6 means-plus-function element. The parties further agree that the corresponding structures disclosed in the specification for the “driver input means” are: a computer keyboard, a cellular telephone keypad, and speech input. The parties further agree that a predictive spelling algorithm is not a disclosed structure for this element.

Issue: The parties’ dispute is limited to the construction of the function required by this “mean-plus-function” limitation, in particular, whether the function is “entering data into said computing apparatus, said data including a desired destination,” as Harman contends, or just “entering data,” as MIT contends.

Harman’s Proposed Construction: The function for the “driver input means” is “entering data into said computing apparatus, said data including a desired destination.”

“a map database...which distinguishes between physical and legal connectivity”

Agreed Constructions: The parties agree that the term “physical connectivity” means whether “[two] pieces of pavement connect.” Ex. F, ’685 Patent Col. 2 Lns. 12-16. The parties also agree that the term “legal connectivity” means “whether one can legally drive onto a physically connected piece of pavement.” *Id.*

Issue: Whether the complete phrase “a map database . . . which distinguishes between physical and legal connectivity” has the specific meaning that MIT set forth in the specification and explained to the Examiner during prosecution.

Harman’s Proposed Construction: The meaning MIT described during prosecution of the patent, namely “a database containing map information that includes separate but equal databases for representing each physical and legal connectivity, thereby causing the route-finder to consider only legal paths; this excludes a map database in which legal connectivity is represented as a link attribute.”

“a discourse generator . . . for composing discourse including instructions and other messages for directing the driver to the destination from the current position”

Issue: Whether importing limitations not recited in claim 1, and which are expressly described in the specification as relating merely to a preferred embodiment, is improper. Specifically, whether reading “composing discourse” to require specific discourse generated using a discourse model is improper, particularly where the term “discourse model” does not appear in the claim.

Harman’s Proposed Construction: The plain language of the claim reveals that the “discourse generator” “compose[s] discourse” and “discourse” is “instructions and other messages for directing the driver to the destination from the current position.” In other

words, discourse is simply words to be spoken, and the discourse generator simply composes those words.

“consulting said map database”

Issue: Whether this limitation requires that *said map database must* be consulted, as Harman contends, or whether it should be broadly construed, as MIT contends, to encompass consulting something other than said map database.

Harman’s Proposed Construction: The *said map database*, as opposed to something other than *said map database*, must be consulted.

“functionally connected”

Agreed Construction: The parties agree, in part, that “functionally connected” means “connected in a way that facilitates transmission of information; this need not be a physical connection.”

Issue: Whether “functionally connected” should be given its plain and ordinary meaning (to which the parties largely agree) or whether it should be further construed, as MIT contends, to include wording that (i) is irrelevant to the particular phrase being construed, and (ii) confuses and contradicts the other language in claim 1 that requires the specific connection/interaction that MIT added during prosecution to overcome the Examiner’s rejection.

Harman’s Proposed Construction: Each time the phrase “functionally connected” appears in claim 1, additional language within the claim expressly establishes (i) the direction of the communication flow, and (ii) whether one thing must “consult” another thing. Simply put, “functionally connected” requires no construction beyond “connected in a way that facilitates transmission of information; this need not be a physical connection.”

Claim 45

“at the time the act is to be performed”

Issue: Whether this phrase requires construction

Harman’s Proposed Construction: Within the context of claim 45, this phrase has a plain and ordinary meaning. No construction is needed.

IV. LEGAL STANDARDS FOR CLAIM CONSTRUCTION

Markman proceedings are important in patent cases and are intended to help guide the court in construing the patent claims. It has long been recognized “since at least 1836” that “the claims of a patent define the invention to which the patentee is entitled the right to exclude.”

Phillips v. AWH Corp., 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*) (quotations and citations omitted). As such, the court must be guided by the patent claims themselves, not the self-serving constructions of the parties before it, and must ordinarily give the claims their “ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1313.

After the Federal Circuit’s *en banc* decision in *Phillips*, there can be no doubt that, where the ordinary meaning of patent claims is readily apparent claim construction involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314 (citing *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001) (holding that the claims did “not require elaborate interpretation”)). In addition to affirming this “bedrock principle,” the *Phillips en banc* decision reiterated and clarified the well-known legal principles applicable to claim construction. First and foremost, claim terms should be given their ordinary and customary meaning. *Phillips*, 415 F.3d at 1312-13. In this vein, “the claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Id.* at 1314 (citing *Vitronics*, 90 F.3d at 1582). However, claim terms cannot be construed in a vacuum:

Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the ***context of the particular claim*** in which the disputed term appears, but in the ***context of the entire patent***, including the specification.

Id. at 1313 (emphasis added) (citations omitted). Indeed, “[t]he construction that stays true to the claim language and ***most naturally aligns with the patent’s description of the invention*** will be, in the end, the correct construction.” *Phillips*, 415 F.3d at 1316 (quoting *Renishaw PLC v. Marposs Societa per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998 (emphasis added))).

“[A] court ‘should also consider the patent’s prosecution history, if it is in evidence.’” *Phillips*, 415 F.3d at 1317. “Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent.” *Id.* The prosecution history represents the “public record of the patentee’s representations concerning the scope and the meaning of the claims.” *Spring Window Fashions LP v. Novo Industries, L.P.*, 323 F.3d 989, 995 (Fed. Cir. 2003).

In addition to the intrinsic evidence, the Court may, in its sound discretion, also consider extrinsic evidence. *Phillips*, 415 F.3d at 1318-19. However, extrinsic evidence must always be considered “*in the context of the intrinsic evidence.*” *Id.* at 1319 (emphasis added). When considering any evidence, “the court should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly.” *Id.*

In this case, the intrinsic evidence is ample and sufficient: the patent includes a substantial written description; the prosecution history is robust (including a rejection, amendment and discussion) and the primary inventor published an entire doctoral thesis on the subject matter claimed in the ’685 patent, which MIT incorporated into the patent by reference. Because the intrinsic evidence alone provides clear guidance as to the meaning of the claim terms, extrinsic evidence is not necessary to construe the claims. *See Phillips*, 415 F.3d at 1318-19. Here, where Harman cites to MIT’s extrinsic correspondence containing admissions as to the scope of the claims, that extrinsic evidence does not alter the constructions dictated by the intrinsic evidence, but, instead, merely confirms the correctness of those constructions.

V. THE PROPER CONSTRUCTIONS OF THE DISPUTED TERMS

A. “driver input means...for entering data into said computing apparatus, said data including a desired destination” in claim 1.

Harman’s Proposed Construction: The function for the “driver input means” is “entering data into said computing apparatus, said data including a desired destination.”

MIT's Proposed Construction: The function for the “driver input means” is “entering data.”

The parties’ dispute regarding this means-plus-function limitation relates to the construction of the recited function. Harman believes the function is readily understood in light of the claim language, and that it would be improper to alter the specifically claimed function, particularly as MIT proposes. MIT’s proposed construction, which truncates the recited function to require only “entering data,” rewrites and improperly broadens the claim. MIT’s proposed construction is particularly improper because much of the language MIT seeks to delete was *specifically added by MIT during prosecution to overcome the Examiner’s rejection* for failure to recite the connection/interaction of the driver input means:

[a] driver input means...~~whereby the driver can enter~~ **for entering data into said computing apparatus, said** data including a desired destination,

Ex. P at 108.

Both parties agree that this limitation of claim 1 is written as a means-plus-function claim limitation pursuant to 35 U.S.C. § 112 ¶ 6. Ex. E at 1. A means-plus-function limitation recites a function to be performed rather than definite structure or materials for performing that function. *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1307 (Fed. Cir. 1998). Such a limitation must be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. 35 U.S.C. § 112, ¶ 6.

To construe a means-plus-function limitation, the court must first identify the claimed function. *Lockheed Martin Corp. v. Space Sys/Loral, Inc.*, 324 F.3d 1308, 1319 (Fed. Cir. 2003). “In identifying the function of a means-plus-function claim, a claimed function may not be improperly narrowed or limited beyond the scope of the claim language.” *Id.* (citing *Micro Chem. Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999)). “Conversely, neither may the function be improperly broadened by ignoring the clear limitations contained in

the claim language. The function of a means-plus-function claim must be construed to include the limitations contained in the claim language.” *Id.*

The function of the limitation can therefore be readily determined by simply reading the limitation itself:

driver input means functionally connected to said computing apparatus *for entering data into said computing apparatus, said data including a desired destination,*

Ex. F at Col. 29 Lns. 65-68 (claim 1) (emphasis added).

To adopt MIT’s overly broad function eviscerates more than half of the limitation by deleting and ignoring the phrase “into said computing apparatus, said data including a desired destination.” Harman’s construction, on the other hand simply repeats the exact language from the claim, as required by the § 112 ¶ 6 case law. *Lockheed Martin*, 324 F.3d at 1319 (“[t]he function is properly identified as the language after the ‘means for’ clause....”). Harman’s construction is particularly mandated here because MIT added this exact language during prosecution to overcome the Examiner’s rejection of claim 1. *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) (“The purpose of consulting the prosecution history in construing a claim is to ‘exclude any interpretation that was disclaimed during prosecution.’”)

MIT does not contend that the words “for entering data into said computing apparatus, said data including a desired destination” are unclear and need to be further explained for the benefit of the jury. MIT just wants to eliminate those words from claim 1. This is improper.

B. “a map database...which distinguishes between physical and legal connectivity” in claim 1.

Harman’s Proposed Construction: “a database containing map information that includes separate but equal databases for representing each physical and legal connectivity, thereby causing the route-finder to consider only legal paths; this excludes a map database in which legal connectivity is represented as a link attribute.”

MIT's Proposed Construction: “a map database that contains information on both physical connectivity and legal connectivity and arranged so that the computing apparatus can gain access to this information.”

Federal Circuit precedent mandates that the Court examine the intrinsic evidence, including the specification and prosecution history, in order to determine whether MIT narrowed the scope of the “map database” limitation, either through a disavowal in the specification or a disclaimer during prosecution. *Chimie*, 402 F.3d at 1384 (“The purpose of consulting the prosecution history in construing a claim is to ‘exclude any interpretation that was disclaimed during prosecution.’”) Here, MIT did both. As a result, Harman’s proposed construction, which takes into account the limiting intrinsic evidence, *verbatim*, is correct and should be adopted.

1. The phrase “a map database...which distinguishes between physical and legal connectivity” should be construed to exclude map databases which are disavowed in the specification.

The ’685 patent describes and claims a map database in which physical and legal connectivity are separate, such that the route finder does not consider illegal paths (*i.e.* streets that are physically connected but which it is illegal to navigate, such as going the wrong way on a one-way street.) MIT contends in the specification that this is important because “legal connectivity is essential for route finding, and physical connectivity for describing the route.” *See* Ex. F at Col 2 Lns. 16-18. Route finding is the process of determining the actual route that will be taken, whereas route description refers to the words used to describe that route. MIT’s specification cautions that “legal connectivity does not replace physical connectivity” because “route description requires information about physical connections.” *Id.* at Col. 4 Ln. 68-Col. 5 Ln. 2. The specific arrangement of physical and legal connectivity MIT described and claimed in the ’685 patent addresses the inventor’s perceived “questionable design decisions on the representations of legal restrictions” in the prior art. *See* Ex. I at 57.

Thus, to practice the specific map database MIT described and claimed in the '685 patent requires that “only legal paths” are considered during route finding, thus reducing computer processing time. *See* Ex. F at Col. 5 Lns. 11-14. Route processing time was an important issue for MIT’s project. *See, e.g., id.* at Col. 9 Lns. 12-14 (noting that “the Back Seat Driver might be better served with an algorithm that finds a reasonable route in less time.”) MIT’s alleged invention addressed processing time for route finding by including a map database with “explicit representation of legal connectivity,” allowing the route finder to consider only legal paths. *See id.* Col. 5 Lns. 6-9.

MIT’s alleged solution to the problem it identified in the prior art is described in the specification as a “significant extension” of the map database to include an “**explicit representation** of legal connectivity.” *Id.* at Col. 5 Lns. 6-8. This extension was necessary to “allow[] **the route finder to consider only legal paths.**” *Id.* at Col. 5 Lns. 11-12. And “this [representation of physical and legal connectivity in the map database] has not been included in any other navigation system,” according to the specification. *Id.* at Col. 5 Lns. 12-14.

MIT also disclaimed systems that merely contain information on both physical and legal connectivity in order to distinguish the Back Seat Driver from such prior-art navigation systems. Yet, these very systems MIT disclaimed would now fall within MIT’s newly expanded construction. *See* Ex. I at 2, 48, 56, 58. And the latter half of MIT’s proposed construction “and arranged so that the computing apparatus can gain access to this information” adds nothing. Thus, MIT’s position which requires that physical connectivity and legal connectivity be contained in the map database cannot be correct.

It is well known that if, in the specification, the patentee has explicitly disclaimed or clearly disavowed the ordinary meaning of terms – as MIT has done here – that disavowal

controls a later interpretation of the claim term. *Bell Atl. Net. Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001) (citing *Schering v. Amgen*, 222 F.3d 1347, 1353 (Fed. Cir. 2000); *Optical Disc v. Del Mar Avionics*, 208 F.3d 1324, 1334 (Fed. Cir. 2000)); see also *Toro Co. v. White Consol. Indus., Inc.*, 199 F.3d 1295, 1301 (Fed. Cir. 1999) (limiting scope of claim term to structure described as “important” in the specification). Here, the specification shows that MIT disavowed the exact construction it now proposes. As such, MIT’s construction, which broadens the claim language to include subject matter expressly excluded in the specification, is improper. *Phillips*, 415 F.3d at 1316.

2. The phrase “a map database...which distinguishes between physical and legal connectivity” should be construed to exclude map databases which were disclaimed by the inventor during prosecution.

MIT confirmed during prosecution that its map database “distinguish[ed] between physical and legal connectivity” in a very specific way, and in a different manner than did other known, prior-art navigation systems known to MIT at the time. In fact, MIT told the examiner that its map database was “*unique in maintaining separate but equal representations for physical and legal topology.*” Ex. P at 78 (emphasis added). By telling the Examiner its map database was “unique” MIT thus explicitly disclaimed all prior-art map databases then-known to MIT; even those systems that included representations for both physical and legal connectivity, and even those which included information representations of one-way streets, and even those that were capable of excluding illegal routes from their instructions. That art included, at least:

The *University of Calgary AVL-2000 system* uses a map that originated as a Canadian government Area Master File. This format, similar to DIME, also required extensive augmentation...*Link (segment) attributes include... one way limitations, banned turns... and restricted areas.*

Ex. P at 77 (emphasis added).

These maps have some questionable design decisions on the representation of legal restrictions...*The Calgary map represents legal topology (one ways, banned turns) as a link attribute instead of in the network topology...*

Ex. P at 78 (emphasis added).

In representing the Back Seat Driver as “unique,” MIT also disclaimed several references that were then-known to MIT, including those MIT specifically discussed in MIT’s Information Disclosure Statement, submitted to the Examiner during prosecution (*see* Ex. P at 70-78), including:

Harris, Digital Map Dependent Functions of Automatic Vehicle Location Systems (Ex. Q at p. 83):

“In the spatial domain one must be aware of special road network features such as one way streets, restricted areas . . . banned turns These features can be embedded into the network topology data as attributes to links.”

Pilsak, EVA-An Electronic Traffic Pilot For Motorists (Ex. R at p. 101):

“In order to determine which is the best route from point 1, to point 2, the following data must be stored in the data base:

- Which connections exist between individual points in the city;
- In which direction one is allowed to drive on each of these connecting streets;”

Ono, CD-ROM Assisted Navigation System (Ex. O at p. 119):

Maps contain a variety of information in addition to topography and the names of places, depending on the particular applications. Like a town map, the information also includes various data related to positions. For example, . . . Information on traffic restrictions, such as one-way, no-entry and no right(left) turns.

Elliot et al., Route Finding in Street Maps by Computers and People (Ex. S at p. 259)

In addition to handling distance minimization, the program also has facilities for handling one-way streets and limited access highways.

Neukirchner et al., Digital Map Data Bases for Autonomous Vehicle Navigation Systems (Ex. T at p. 320):

Autonomous map matched vehicle navigation systems like the EVA system of Bosch/Blaupunkt or the Carin system of Philips require information about street networks, in which they are intended to be a navigation aid for drivers. . . . To make this possible the stored data must contain information about: . . . traffic regulations and restrictions relevant to the streets in the digital network (right of way regulation, one way streets, no left turn, etc.)

Now, MIT has apparently changed its mind. MIT's proposed construction, covers all of these prior-art navigation systems' map databases, by ignoring *all* of this intrinsic prosecution history evidence, and is therefore incorrect. MIT cannot now ignore these disclaimers it made to obtain the '685 Patent. *See Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to 'exclude any interpretation that was disclaimed during prosecution.'"); *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1347 (Fed. Cir. 2004); *Spring Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 994 (Fed. Cir. 2003) ("It is well established that 'the prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution.'")

3. The phrase "a map database...which distinguishes between physical and legal connectivity" should be construed to require the same solutions to the same problems that MIT told the Examiner were solved by its "unique" map database.

It is also well-settled that claim terms should be interpreted in light of the problems discussed, as well as the solution provided by the patentee. *Minn. Mining and Mfg. Co. v. Johnson & Johnson Orthopedics, Inc.*, 976 F.2d 1559, 1566 (Fed. Cir. 1992). Here, MIT told the Examiner that the alleged invention of the '685 patent was different from prior-art systems, in which the map database considered all possible paths, instead of considering "*only legal paths*" like the Back Seat Driver. Ex. P at 77-78. MIT told the Examiner that the map databases in prior-art systems represented only physical connectivity, "with the assumption that legal [connectivity would] be equivalent to the physical [connectivity] unless specifically indicated,"

and that MIT's alleged invention purportedly solved this perceived "problem" by using a "unique" map database in the Back Seat Driver system that "maintained *separate but equal representations for physical and legal [connectivity]*." *Id.*

MIT's broad construction, which would include map databases that suffer from the very problems that MIT claimed were cured by its "unique" map database, is incorrect. Harman's construction, on the other hand, comports with the prosecution history because it construes "a map database...which distinguishes between physical and legal connectivity" to include "separate but equal representations for physical and legal [connectivity]," and requires the database be configured such that the route finder "considers only legal paths" – which is exactly what MIT told the Examiner during prosecution.

4. Harman's proposed construction of the phrase "a map database...which distinguishes between physical and legal connectivity" is entirely consistent with MIT's pre-litigation admissions.

In 1996, only three years after the '685 patent issued, and nearly nine years before MIT filed this litigation, MIT went on the record, in detail, about the narrow meaning of the "map database" limitation in claim 1 of the '685 patent. In a 1996 letter, Dr. Sam Pasternack (the same attorney who drafted and prosecuted the '685 patent for MIT) accused a company called Zexel of infringing claim 1 by selling a navigation system called "Navmate." In that letter, MIT confirmed that claim 1 required a specific type of "map database...which distinguishes between physical and legal connectivity." Indeed MIT contended that this "unique" map database was so novel that it alone could distinguish the Back Seat Driver over prior-art systems:

Assuming, *arguendo*, that the discourse generator is well known in the art, it does not follow that claim 1 is invalid. For example, claim 1 includes as a limitation "a map database functionally connected to said computing apparatus which distinguishes between physical and legal connectivity." I call to your attention the specification of the '685 patent at column 5 beginning with line 6 which discusses the explicit representation of legal connectivity as distinguished from physical connectivity. It is M.I.T.'s position

that...this limitation is not disclosed in any of the prior art known to us including the references accompanying your August 9, 1996 letter.

Ex. U (Exhibit U will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal).

Notably, MIT's correspondence cited the passage from the specification ("column 5 beginning with line 6") that state "the most significant extension" of its map database, is "the explicit representation of legal connectivity" which "allows the route finder to consider only legal paths," and that further emphasizes "[t]o the inventor's knowledge, this has not been included in any other navigation system." Ex. F at Col. 5 Lns. 6-14.

Two "prior art...references accompanying [Zexel's] August 9, 1996 letter," which MIT noted did "not disclose[]" "the explicit representation of legal connectivity as distinguished from physical connectivity" in claim 1, were the Thoone and Suguie articles. Ex. U, V (Zexel's 8/9/96 letter) Both references disclose navigation systems with map databases that provided spoken instructions and contained information on both physical and legal connectivity, but neither distinguished such information in the specific manner described in the specification of the '685 patent (*i.e.*, in the manner that MIT told Zexel was required by claim 1, as properly construed):

- M.L. Thoone, "CARIN, A Car Information and Navigation System," published in 1987, discloses a speaking navigation system with a map database that includes both physical and legal connectivity. Ex. W at 319-320 (Thoone describing the map database and noting that "directions of one-way streets" are included therein)
- M. Suguie *et al*, "CARGuide - On-Board Computer for Automobile Route Guidance," published in 1984, discloses a speaking navigation system with a map database that includes both physical and legal connectivity. Ex. X at 701-704 (Suguie describing "Street Map Database" and noting (on p. 703) that "A street segment connecting two intersections may have different weights for each direction (as in one-way streets).") (Exhibit X will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal).

In addition to disclaiming systems like those by Thoone and Suguie, MIT's 1996 letter further noted that the way in which the '685 patent's map database "distinguishes between

physical and legal connectivity” was “not disclosed in *any* of the prior art known to us.” Ex. U. Accordingly, based on MIT’s own admissions, this limitation must be construed narrowly, so as to avoid all the prior art map databases known to MIT and identified in the Information Disclosure Statement during prosecution (noted above).

MIT’s broad proposed construction of this phrase renders meaningless MIT’s own purported novelty of its “map database” and is directly adverse to its own admissions, both during prosecution and when arguing validity some three years later. Harman’s construction, on the other hand, is consistent with all the intrinsic evidence, as well as MIT’s admissions. As such, Harman’s construction is the “correct construction.” *Phillips*, 415 F.3d at 1316.⁶

5. MIT’s proposed construction improperly impacts other claim terms beyond the particular phrase at issue.

Without any support from the intrinsic evidence, MIT’s overly broad construction adds language (“arranged so that the computing apparatus can gain access to this information.” (emphasis added)) that is contrived to provide MIT another⁷ opportunity to eviscerate the specific system architecture MIT was required to add during prosecution. *See* Section D.2, below. Once again, MIT’s proposed construction is wrong.

MIT told the world that the Back Seat Driver contained a map database with “*separate but equal representations of physical and legal [connectivity]*,” and the specification tells us that the database must do this so that “*the route-finder consider[s] only legal paths.*” These

⁶ The Federal Circuit has noted that extrinsic evidence can be used to reinforce constructions supported by the intrinsic evidence, so long as extrinsic evidence is not used to contradict the intrinsic evidence. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980-81 (Fed. Cir. 1995) (“Extrinsic evidence is to be used for the court’s understanding of the patent, not for the purpose of varying or contradicting the terms of the claims.”); *Global Maintech Corp. v. I/O Concepts, Inc.*, 179 Fed. Appx. 47, 51-52 (Fed. Cir. 2006) (affirming the lower court’s reliance on the extrinsic evidence to support the claim construction reached by the intrinsic evidence).

⁷ Perhaps this is MIT’s back-up plan, in case the Court rejects MIT’s construction of “consulting said map database” (which MIT contends does not require actual consultation of “said map database,” as addressed below).

requirements are echoed in the specification, the prosecution history, the inventor's thesis which MIT incorporated into the specification, and the admissions contained in MIT's written correspondence over the past decade. MIT must be held to these representations. Unlike MIT's, Harman's proposed construction "stays true to the claim language and most naturally aligns with the patent's description of the invention." *Phillips*, 415 F.3d at 1316 (citation omitted). As such, it is "the correct construction." *Id.*

C. "discourse generator...for generating discourse" in claim 1.

Harman's Proposed Construction: discourse is simply words to be spoken. As recited in the claim itself, discourse in claim 1 must include "instructions and other messages," where instructions and other messages include those items described in the specification as such. A discourse generator generates discourse.

MIT's Proposed Construction: "Discourse generator" means "A module, in software or hardware, which composes driving instructions and other messages according to a discourse model, for delivery at the appropriate time and place, and based on the current position of a vehicle and its planned route." The term "discourse model" needs further construction, and means "a way to provide information needed by a conversation participant in context to enable the conversation participant to determine why an utterance was provided and what the utterance means."

The parties disagree as to how much of this phrase needs to be construed by the Court. Harman believes that the only true dispute is the meaning of the word "discourse," and that a "discourse generator" is easily understood to mean something that generates discourse. The remaining words in the "discourse generator" limitation are common words which are easily understandable by a jury and do not require further construction. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). MIT, on the other hand, insists on construing the phrase "discourse generator" in a manner that reads a litany of additional limitations into the claim from the specification's preferred embodiment. MIT's position also violates the doctrine of claim differentiation by reading into claim 1 limitations that are recited in subsequent claims

that are dependant on claim 1. Finally, MIT's proposed construction directly contradicts more than a decade's worth of MIT's admissions regarding the breadth of "discourse."

1. The broad terms "discourse" and "discourse generator" in claim 1 should be given their plain and ordinary meaning.

The dictionary defines discourse as "extended verbal expression in speech or writing." *See* Ex. BB (definition used by MIT is pre-litigation correspondence *see* Section C.5) (Exhibit BB will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal). Such a plain meaning should be adopted, given the broad language of claim 1, which MIT drafted, without reciting any particular discourse structure (beyond the inclusion of "instructions and other messages"), and without any mention of a "discourse model."

Claim 1 of the '685 patent includes three limitations directed to the generation of spoken directions. First, the discourse generator (shown as item 18 in Fig. 1, below) composes the content (text) of what is going to be spoken. Next, the speech generator (item 20) converts that composed discourse (text) into computerized speech signals. Finally, the voice apparatus (shown as speaker 26) outputs the generated speech signals as audible, computerized speech:

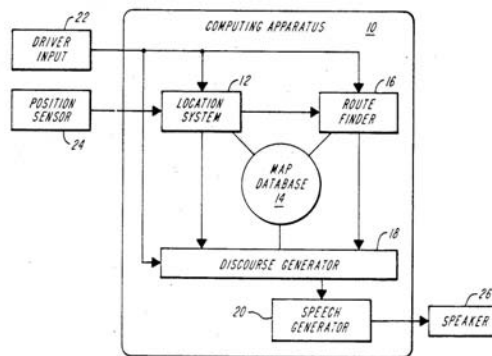


FIG. 1

This three-step approach to spoken directions stems from the equipment that Davis and Schmandt used in the Back Seat Driver project. The Back Seat Driver generated computerized speech using a commercially available text-to-speech synthesizer, called DecTalk. *See* Ex. F at

Col. 23 Lns. 40-43. DecTalk converts written text into speech, thereby necessitating a separate, earlier step or module for composing the text, which is then input into DecTalk, which, in turn, outputs speech signals that are sent to a speaker. *See* Ex. I at 149. Using a text-to-speech synthesizer, such as DecTalk was preferred because it did not require large amounts of memory to record digitized audio. *See id.* at 116. In the late 1980's, at the time of the Back Seat Driver project, computer memory was still very expensive, and it was impractical for MIT to use digitized audio stored in large amounts of memory. *See id.* at 116. Instead, MIT chose to use the DecTalk speech synthesizer (which had been used in Davis' earlier Direction Assistance work), which could generate the desired text output, without storing the words in memory as digitized audio. In order for this to work, however, the text of the words had to be generated in advance. *See id.* at 101, 116. This is the reason for the three-stage approach (discourse generator/speech generator/voice apparatus) to spoken instructions in claim 1 of the '685 patent.

2. Detailed discourse structure according to a discourse model is merely a preferred embodiment; it is not recited in (or required by) claim 1.

The detailed discourse structure and discourse model language included in MIT's proposed construction of "discourse generator" relate, at best, to a particular preferred embodiment. The "Summary of the Invention" in the '685 patent spans from column 1 through the upper part of column 3, and yet makes no mention of any "discourse model." To the contrary, the invention is summarized as:

[A] computer navigation system which gives spoken instructions to the driver of an automobile to guide the driver to a desired destination...Discourse generating programs compose driving instructions and other messages which are communicated to the driver using voice generating apparatus as the driver proceeds along the route.

Ex. F at Col. 1 Ln. 60 – Col. 2 Ln. 3.

The "Summary of the Invention" does later state that:

Driving instructions generated by the Back Seat Driver are modeled after those given by people. The two issues for spoken directions are what to say (content) and when to say it (timing). The content of the instructions tells the driver what to do and where to do it. The Back Seat Driver has a large taxonomy of intersection types, and chooses verbs to indicate the kind of intersection and the way of moving through it. The instructions refer to landmarks and timing to tell the driver when to act.

Timing is critical because speech is transient. The Back Seat Driver gives instructions just in time for the driver to take the required action, and thus the driver need not remember the instruction or exert effort looking for the place to act. The Back Seat Driver also gives instructions in advance, if time allows, and the driver may request additional instructions at any time. If the driver makes a mistake, the Back Seat Driver describes the mistake, without casting blame, then finds a new route from the current location.

Id. at Col. 2 Lns. 33-53. However, these passages of the “Summary of the Invention” (as well as the entirety of the “Summary of the Invention” after Col. 2 Ln. 19) explain features relating to the dependent claims, not claim 1. Dependent claims 41-47 include further limitations regarding the particular types of instructions generated, such as those summarized in the above passages. Dependent claims 8-20 recite additional limitations regarding the map database, including the features recited at Col. 2 Lns. 19-32 (just before the passages regarding detailed instructions) further evidencing that the statements in the “Summary of the Invention” regarding detailed types of instructions are meant to summarize the features found in the dependent claims, not claim 1. The same is true with respect to the last few paragraphs of the “Summary of the Invention” (Col. 2 Ln. 54 – Col. 3 Ln. 3), that describe features related to dependent claims, such as, for example, dependent claims 54 (user model) and 48 (repeating/clarifying instructions).

The concept of a “discourse model” is introduced in the “Description of the Preferred Embodiment” section of the patent, which begins at Col. 3 Ln. 20. The section begins by noting that “[t]he heart of the system is a computing apparatus 10 comprising a vehicle location system 12, a map database 14, a route finder 16, a discourse generator 18, and a speech generator 20.” The specification then briefly notes that, in the preferred embodiment:

Based on the current position of the automobile and the route, the discourse generator 18 composes driving instructions and other messages according to a discourse model in real time as they are needed.

Id. at Col. 3 Lns. 35-38. The beginning (but only the beginning) of this passage is similar to the “discourse generator” of claim 1:

a discourse generator functionally connected to said computing apparatus for accepting the ***current position*** from said location system ***and the route*** from said route finder, for consulting said map database, and ***for composing discourse including instructions and other messages*** for directing the driver to the destination from the current position,

Id. at claim 1. The actual language of claim 1 does not include the phrase “according to a discourse model,” and it is reasonable to assume that MIT intentionally excluded the term “discourse model” in order to obtain a broadly-worded claim 1. Indeed, the language of claim 1, as it was originally submitted, provides even stronger proof of such an intentional decision:

a discourse generator which composes instructions and other messages based on data from said location system, said route-finder, and said map database.

Ex. P at 50.

None of the five figures in the '685 patent provide any detail at all for the “discourse generator.” Yet, MIT did include detailed figures of the “map database” (Figure 3), the “route finder” (Figure 4), and the “position sensor” (Figure 5) of claim 1. Figures 3-5 were added in response to the Examiner’s objection, during prosecution, to the lack of such figures. The Examiner noted “deficiencies in the drawings [that] relate to the operation of the route finder, location system and discourse generator and other subsystems shown in Fig. 1” and suggested that they were “nevertheless readily adapted to description by means of a flow chart or by means of a block diagram as directed at the end of [37 C.F.R.] 1.83(a).” Ex. P at 95. Although MIT added detailed figures for other aspects of claim 1 (Figures 3-5), MIT did not add any figures or flow chart to support a narrow reading of the “discourse generator.” Instead, MIT decided to continue to generically represent the “discourse generator” in each of the patent figures.

The fact that the specification includes, within the “Description of the Preferred Embodiment, a lengthy “Discourse Generator” section is no basis to read that preferred embodiment into claim 1. The specification is clear that the lengthy “Discourse Generator” section is meant to describe the subject matter “particularly as embodied in the working prototypes.” Ex. F at Col. 3 Lns. 57-60. The “Discourse Generator” section itself expressly notes that “The discourse model [is] *preferred* for the Back Seat Driver,” and does so only at the very end of the “Discourse Generator” section. *Id.* at Col 23 Lns. 6-7.⁸

On its face, the majority of the “Discourse Generator” section of the specification is directed to features recited in dependent claims, not in claim 1. Such features include, for example:

- object-oriented programming methodology (Col. 13 Lns. 60-62), which relates to dependent claim 41;
- classification of intersections into a taxonomy of intersection types (Col. 14 Ln. 5 to Col. 15 Ln. 25), which generally relates to dependent claims 42 and 43;
- the length and tense of the instruction (Col. 15 Lns. 26-38), which generally relates to dependent claim 44;
- the use of landmarks and other types of cues (Col. 16 Ln. 50 – Col. 18 Ln. 18), which generally relates to dependent claims 46-47;
- retaining and using a history of the route (Col. 18 Ln. 58 – Col. 19 Ln. 6), which generally relates to dependent claim 51;
- inferring dangers from the road network (Col. 19 Lns. 7-38), which generally relates to dependent claim 52;
- informing the driver of errors (Col. 19 Ln. 39 – Col. 20 Ln. 13), which generally relates to dependent claim 53; and
- using a user-model (Col. 20 Ln. 33 – Col. 21 Ln. 59), which generally relates to dependent claim 54.

⁸ Tellingly, MIT does not contend that the particular discourse model disclosed in the specification as a preferred embodiment is required, because there is no dispute that Harman’s systems do not use that discourse model. Thus, MIT is trying to have it both ways, by importing a “discourse model” into claim 1, but not the “discourse model” described in the specification.

It would be erroneous to read any of these limitations into claim 1 from the detailed description of the preferred embodiment, particularly since they are addressed in other dependent claims. *See Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1563 (Fed. Cir. 1986) (“This court has cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.”) For the same reason, it would likewise be erroneous to read into claim 1 MIT’s proposed “discourse model” limitations.

3. MIT’s proposed construction violates the doctrine of claim differentiation

MIT’s proposed construction of the “discourse generator” limitation of claim 1 is also improper in light of the doctrine of claim differentiation. “Differences among claims can also be a useful guide in understanding the meaning of particular claim terms. For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d at 1314-15 (citations omitted).

Here, claim 44 of the ’685 patent, which is dependent on claim 42 (which is, in turn, dependent on claim 1) adds the limitation that:

said discourse generated further depends on a description function for each intersection type which generates a description given the length and tense of the desired description and the position along the route from which an instruction is to be given.

Ex. F at claim 44. Claim 45 of the ’685 patent is dependent on claim 1 and adds the limitation that:

[the] discourse generated comprises a long description of an act given substantially before the act is to be performed and a short description given at the time the act is to be performed.

Id. at claim 45. Claim 51 of the ’685 patent is dependent on claim 1 and adds the limitation that:

said automobile navigation system records a history of the route and the discourse already generated and uses this knowledge to generate cues for future discourse and make future discourse more understandable.

Id. at claim 51.

MIT's proposed construction for "discourse generator" raises more questions than it answers with respect to what, exactly is required for "discourse" in claim 1,⁹ because adopting MIT's construction would require, an additional and unnecessary step, by requiring the court to construe yet another term – discourse model – which appears nowhere in the claims. And MIT's construction erroneously requires some or all of the aspects already recited in other dependent claims, including claims 44, 45, and 51. For these reasons alone, MIT's proposed constructions for the "discourse generator" limitation of claim 1 are incorrect and should be rejected.

4. The remaining language of the "discourse generator" limitation establishes the general nature of "discourse" and that it simply requires "instructions and other messages..."

The language of the "discourse generator" limitation, read in its entirety, expressly demonstrates that the "discourse" composed in claim 1 is simply "instructions and other messages for directing the driver to the destination from the current position." Ex. F, at claim 1. Harman's construction of "discourse" is entirely consistent with the surrounding claim, and is therefore correct. *Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed. Cir. 1997) ("the language of the claim frames and ultimately resolves all issues of claim interpretation."). Nothing in the specification or prosecution history shows that the inventor intended to further narrow the "instructions or other messages" within the meaning of "discourse" in claim 1.

Accordingly, the entirety of the "discourse generator" limitation should be given its plain and ordinary meaning. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). This includes the meaning of the phrase "instructions and other messages," which is

⁹ See deposition testimony of MIT's purported linguistics/discourse expert, Dr. Barbara Grosz (Ex. N at 223:3–227:13, at 235:19–239:4, and at 239:18–242:11) in which even she is incapable of succinctly explaining what would (and what would not) constitute the necessary functionality for a navigation system to be deemed to be generating discourse according to a discourse model.

readily ascertained from the specification. *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term...in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”).¹⁰

Furthermore, the impropriety of MIT’s proposed construction is further illustrated by the anomalous result it would produce. If the Court adopts MIT’s proposed construction, it will then also have to take an unusual and *additional step* of construing “discourse model.” This is an incorrect result because the term “discourse model” appears nowhere in any of the claims – this is after all “claim” construction. *See E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988) (it is inappropriate to import an “extraneous limitation” that is “wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim.”). Neither the specification nor the prosecution history contains any support for MIT’s proposed construction of “discourse model.” MIT is not only improperly reading a “discourse model” limitation into claim 1, but MIT further overreaches by reading additional limitations into claim 1 by proposing a narrow meaning of the phrase “discourse model.”

5. For more than a decade, until the middle of this litigation, MIT contended that the “discourse generator” limitation of claim 1 was very broad and did not require a “discourse model.”

For more than a decade, MIT understood that the “discourse generator” limitation of claim 1 was very broad – so broad that it covered systems that only provided simple, two-word, pre-recorded statements, such as “bear left.” Ex. Y (Exhibit Y will be submitted later pursuant to

¹⁰ Both “instructions” and “other messages” have the meanings given to them in the specification. Harman does not believe MIT disputes the construction of “instructions” and “other messages,” but has been unable to confirm this as of this writing. The parties have agreed that neither an “instruction” nor an “other message” includes silence.

Harman's previously filed Assented-To Motion to File Under Seal). MIT repeatedly maintained that nothing in the specification limited the "discourse generator" limitation in any way, and even pointed to passages in the specification that establish that simple, two-word phrases are within the scope of claim 1. *Id.*

In 1996, in its correspondence with Zexel, MIT again went on the record, in detail, about the broad meaning of the term "discourse" as it is used in claim 1 of the '685 patent. Zexel had previously noted that its accused "Navmate system merely uses simple, pre-recorded phrases." Ex. Z at 1875 (Exhibit Z will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal). In a July 16, 1996 letter Dr. Pasternack, on behalf of MIT, responded:

You state in your letter that the "Navmate system merely uses simple, pre-recorded phrases" and I assume that this statement is meant to suggest that the Navmate system does not meet the discourse generator limitation [of claim 1 of the '685 patent]. I call to your attention the specification at column 15, line 32 which sets forth a typical phrase uttered by the system of the '685 patent, namely, "Bear left." It is difficult to comprehend that the Navmate system generates phrases "simpler" than this. I further direct your attention to the specification at column 23, beginning at line 44. This section discusses digitized speech which is pre-recorded...Thus, both "simple" and "pre-recorded" phrases are comprehended by and fall within the discourse generator limitation."

Ex. Y.

Zexel responded, on August 9, 1996, that MIT's "assumption is correct that [Zexel is] convinced that the Navmate system does not include a 'discourse generator.'" Ex. V at 1878 (Exhibit V will be submitted later pursuant to Harman's previously filed Assented-To Motion to File Under Seal). Zexel then pointed to various prior-art navigation systems that provided simple, spoken directions. *Id.* at MIT 1878-79.

In response, MIT continued to emphasize that the “discourse generator” limitation of claim 1 of the ’685 patent did not require any particular type of discourse or discourse model and that “discourse” included “simple, pre-recorded phrases”:

Claim 1 is *not* directed to a discourse generator, but to an automobile navigation system one element of which is a discourse generator. Further, it is M.I.T.’s position that the discourse generator of claim 1 does indeed cover “speech generation features that merely provide simple, pre-recorded phrases.”...As to the scope of claim 1, M.I.T. continues to hold that the discourse generator limitation covers speech generation features which provide simple, pre-recorded phrases.

Ex. U (emphasis in original).

Now, MIT contends that the “discourse generator” limitation is one of the important features of claim 1, due to its generation of detailed discourse according to a discourse model. MIT’s new position, however, is flatly contradicted by MIT’s own 1996 correspondence, authored by the very attorney (Pasternack) who drafted and prosecuted claim 1 of the patent.

Nearly a decade later, but still before this litigation was filed, MIT sent another round of letters to various alleged infringers, including one of Harman’s customers, Porsche. *See* Ex. A. Again, MIT took the position that the ’685 patent consisted essentially of a navigation system, “providing spoken driving instructions.” *Id.* Tellingly, the claim chart that MIT enclosed with its letter to Porsche completely omitted, in its entirety, the “discourse generator” limitation of claim 1. Ex. AA (jumping from the “route finder” limitation to the “speech generator” limitation) (Exhibit AA will be submitted later pursuant to Harman’s previously filed Assented-To Motion to File Under Seal). Once again, MIT’s new position that the “discourse generator” limitation is an important limitation that requires a particular type of discourse and discourse model is inconsistent with MIT’s omission of that limitation in its correspondence to Porsche.

Perhaps the most damaging admission that contradicts MIT’s current, litigation-inspired, construction of “discourse” came in 2003, just before MIT sued Harman. MIT admitted to

Harman that “‘discourse’ [was] a term whose meaning is clearly defined” by a plain, English-dictionary definition found in Webster’s. *See* Ex. BB (citing Webster’s definition of “discourse”: “extended verbal expression in speech or writing”). Thus, unlike its position today, the dictionary definition MIT cited to Harman in 2003 made no mention of any requirements that the “discourse generator” limitation of claim 1 requires “discourse” “deliver[ed] at the appropriate time and place,” “based on the current position of the vehicle and its planned route,” or “in context to enable the conversation participant to determine why an utterance was provided and what the utterance means.”

6. MIT further admits the plain meaning of “discourse” does not require any of MIT’s proposed limitations of “delivery at the appropriate time and place,” “based on the current position of the vehicle and its planned route,” or “in context to enable the conversation participant to determine why an utterance was provided and what the utterance means.”

MIT’s proposed construction of the “discourse generator” limitation improperly imports several additional limitations, including “delivery at the appropriate time and place,” “based on the current position of the vehicle and its planned route,” and “in context to enable the conversation participant to determine why an utterance was provided and what the utterance means.” *Comark Comm. Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998) (improper to import preferred embodiments and unsupported limitations into the claims). However, MIT has repeatedly admitted that Direction Assistance, which was a stand-alone system that provided a series of instructions, prior to the start of a journey, generated “discourse.” Ex. H at 148:20-24; Ex. M; Ex. N at 255:15-256:4. Direction Assistance did not deliver discourse “as the appropriate time and place” – it delivered it all at once, before the journey began. Nor was its discourse “based on the current position of the vehicle” – it did not know the vehicles current position. The discourse spoken by Direction Assistance was also not provided “in context to enable the conversation participant to determine why an utterance was provided” – other than knowing that

utterances were for the purpose of direction-giving, the user did not know why any particular instruction was given at the time the list of instructions was provided over the phone, in advance of the journey.

Direction Assistance proves (and MIT admits) that the plain and ordinary meaning of the “discourse generator” in claim 1 (even as understood by purported experts in the field of computational linguistics, such as Schmandt and Grosz,) is broad and does not require any of the additional narrowing limitations found in MIT’s proposed construction. Accordingly, MIT’s proposed construction should be rejected for this reason, as well.

MIT’s litigation-inspired about-face with respect to the “discourse generator” limitation is undoubtedly the result of the myriad prior art references that Harman has identified, each of which discloses navigation systems generating discourse. However, it is too late for MIT to narrow its claims at this juncture. If MIT wished to narrow the scope of claim 1 to require a “discourse model,” then MIT could have (and should have) included that limitation during prosecution. It is too late for MIT’s belated attempt at rewriting its own claims. *K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead we give effect to the terms chosen by the patentee”).

D. “consulting said map database” in claim 1.

Harman’s Proposed Construction: “for the purpose of seeking or requesting information from said map database.”

MIT’s Proposed Construction: “using, referring to, or relying on data in said map database, without requiring direct access or connection to the map database.”

The phrase “consulting said map database” is properly construed in accordance with its plain and ordinary meaning, requiring that *said map database* must be consulted. MIT’s attempt to construe this phrase as meaning that *something other than said map database* may be consulted drastically departs from the plain and ordinary meaning of the phrase, is overreaching,

and is not supported by the claim language itself or the intrinsic evidence. Furthermore, MIT's proposed construction is improper in light of MIT's amendments to claim 1 during prosecution which added this exact language in order to overcome the Examiner's rejection that claim 1 failed to recite the particular connection/interaction of the system components.

1. "Consulting said map database" should be given its plain and ordinary meaning, which requires the applicable component to seek or request information from the map database.

The phrase "consulting said map database" appears several times in claim 1. Specifically, this phrase describes the particular "interaction" of the location system, the route finder, and the discourse generator with the map database. *See* Ex. F at Col. 30 Lns. 9-24. This recurring phrase is properly construed using its plain and ordinary meaning, requiring exactly what it says, that *said map database* must be consulted. *See U.S. Surgical*, 103 F.3d at 1568 (claim construction is required only where term is unclear and in dispute and necessary to resolve the issues before the court); *Abtox Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023 (Fed. Cir. 1997) ("Nonetheless, throughout the interpretation process, the focus remains on the meaning of claim language" and "the language of the claim frames and ultimately resolves all issues of claim interpretation."). Here, the claim language "consulting said map database" is clear that the applicable component must "consult[]said map database."

MIT asks this Court to construe this phrase in a manner that conflicts with its plain and ordinary meaning and, which is unsupported by the claim language, the specification or the prosecution history. Indeed, MIT's construction would improperly broaden the reach of claim 1 and the dependant claims. Contrary to its plain and ordinary meaning, MIT proposes that "consulting said map database" means simply using, referring to, or relying on data in the map database, *without requiring any actual consultation of the map database by the applicable component*. MIT's construction is contrary to the plain language of the claims, as well as the

specification drawings, which show the direct consultation between the location system, route finder, and discourse generator to the map database. *See* Ex. F at Figures 1 and 3. For at least this reason, MIT's proposed construction should be rejected in favor of Harman's construction, which follows the plain and ordinary meaning of the phrase.

2. "Consulting said map database" should be construed consistent with the prosecution history because this language was added as part of an amendment specifically to "more particularly point out the connections and interactions between the different elements of the invention, as required by the Examiner."

MIT's proposed construction also ignores the amendments MIT made during prosecution. As it was originally filed in the Patent Office, claim 1 lacked sufficient limitations regarding the system architecture, *i.e.*, how the various system components interacted and which components consulted with other components in order to achieve a working system. As originally filed, claim 1 read as follows:

An automobile navigation system which uses spoken instructions to direct a driver to a destination in real time comprising:

- computing apparatus adapted to run and coordinate system processes,
- driver input means whereby the driver can enter data including a desired destination,
- a map database which distinguishes between physical and legal connectivity,
- position sensing apparatus installed in the automobile,
- a location system which determines the automobile's current position on a map from data from the position sensing apparatus,
- a route-finder which computes a route to the destination from any current position,
- a discourse generator which composes instructions and other messages based on data from said location system, said route-finder, and said map database,
- a speech generator which generates speech from said discourse, and
- voice apparatus for communicating said speech to said driver.

Ex. P at 50.

The Examiner promptly rejected claim 1 (and all 57 of its pending dependent claims) for failure to sufficiently claim the connection/interaction of the system:

Claims 1-58 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

* * *

The claims are seen to be vague and indefinite in that, apart from a limited preamble and the recitation of the discourse generator, there is nothing connecting the different elements of the invention with each other in a manner which defines a working automobile navigation system. As it is claim 1 seems to merely recite a number of elements (computing apparatus, driver input means, map database, position sensing, location sensing, route finding, discourse generation and speech generation), without enabling one to understand the manner in which these elements are to interact with one another. In this manner the recitation of these elements is aggregative in nature without a clearly recited connection/interaction between them.

Ex. P at 96-97.

MIT was thus required to amend claim 1 to recite specific “connection/ interaction” between its elements in a manner “enabling one to understand the manner in which these elements are to interact with one another.” *Id.* MIT did exactly that, amending claim 1 as follows (deletions ~~stricken~~, additions in **bold, underlined**):

Claim 1 (Amended)

An automobile navigation system which uses **produces** spoken instructions to direct a driver **of an automobile** to a destination in real time comprising:

computing apparatus ~~adapted to run and coordinate~~ **for running and coordinating**

system processes,

driver input means functionally connected to said computing apparatus whereby ~~the driver can enter~~ for entering data into said computing apparatus, said data including a desired destination,

a map database functionally connected to said computing apparatus which distinguishes between physical and legal connectivity,

position sensing apparatus installed in the automobile and functionally connected to said computing apparatus for providing said computing apparatus data for determining the automobile's current position,

a location system functionally connected to said computing apparatus which determines for accepting data from said position sensing apparatus, for consulting said map database, and for determining the automobile's current position ~~on a map~~ relative to the map database ~~from data from the position sensing apparatus,~~

a route-finder functionally connected to said computing apparatus which for accepting the desired destination from said driver input means and the current position from said location system, for consulting said map database, and computes for computing a route to the destination ~~from any current position,~~

a discourse generator functionally connected to said computing apparatus which composes for accepting the current position from said location system and the route from said route finder, for consulting said map database, and for composing discourse including instructions and other messages ~~based on data from said location system, said route finder, and said map database~~ for directing the driver to the destination from the current position,

a speech generator functionally connected to said discourse generator which generates for generating speech from said discourse provided by said discourse generator, and

voice apparatus functionally connected to said speech generator for communicating said speech provided by said speech generator to said driver.

Ex. P at 108-09.

MIT made extensive amendments detailing a specific system architecture, including where specific “connection[s]/interaction[s]” were required between specific system components. Had MIT not amended claim 1 in such a way, the '685 patent would never have

issued. In particular, MIT added limitations requiring that the route finder, location system, and discourse generator each “consult[] said map database” and each “accept” something “from” another specific component. MIT could perhaps have chosen to use broader language, which would require only that the route finder, location system, and discourse generator utilize certain information, regardless of what was consulted or where that information was accepted from, but MIT did not do so.

As a matter of law, MIT must honor the actual language of the amended claims it secured, and cannot recapture any broader scope, either literally or under the doctrine of equivalents. Several of MIT’s proposed constructions improperly attempt to do exactly that. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 736-737 (2002) (an amendment made for the purposes of 35 U.S.C. § 112 can bar the application of the doctrine of equivalents to the amended portion of the claim); *Honeywell Intern. Inc. v. Hamilton Sundstrand Corp.*, 370 F.3d 1131, 1142 (Fed. Cir. 2004) (“A patentee who narrows a claim as a condition for obtaining a patent disavows his claim to the broader subject matter, whether the amendment was made to avoid the prior art or to comply with § 112. We must regard the patentee as having conceded an inability to claim the broader subject matter or at least as having abandoned his right to appeal a rejection. In either case estoppel may apply.”)

Instead, at this late stage in the litigation, MIT seeks to re-write claim 1 to exclude the specific “connection/interactivity” added during prosecution. MIT’s illogical and unsupported construction would read out of claim 1 the very limitations MIT was required to add in order to “particularly point out and distinctly claim” the system architecture, connectivity and interaction to overcome the Examiner’s wholesale rejection of the ’685 patent.

Properly construed, claim 1, as amended, requires a specific system architecture, where specific system components interact with other specific components in a certain manner. For example, claim 1 recites, in pertinent part:

“driver input means ... for entering data into said computing apparatus...”;

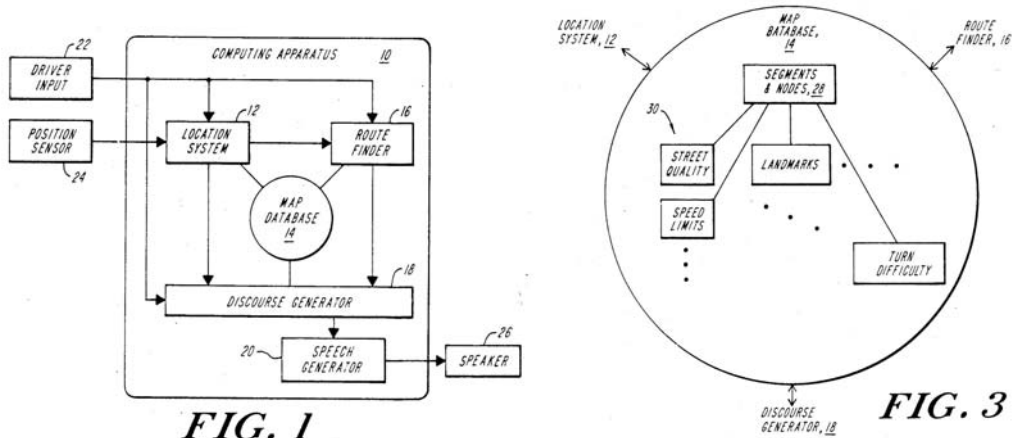
“a location system ... for *accepting data from said position sensing apparatus, for consulting said map database* ...;

“a route finder ... for *accepting the desired destination from said driver input means and the current position from said location system*, [and] for *consulting said map database*, [and] for computing a route to a destination”;

a discourse generator ... for *accepting the current position from said location system and the route from said route finder*, [and] for *consulting said map database*; and for composing discourse including instructions and other messages....”

See Ex. F at Col. 29-30.

The intrinsic evidence teaches exactly such a system architecture. There is not even a hint of evidence to suggest that the claimed invention includes a system that does not actually “consult said map database.” To the contrary, Figures 1 and 3 (also added during prosecution in response to the Examiner’s rejection) show the map database is designed to be directly consulted by the location system, the route finder, and the discourse generator:



Of course, these same three system components that the figures show as “consulting said map database,” are expressly recited in the claim as doing exactly that. There is, therefore, no

support for MIT's proposed construction, which does not require that the specified component actually "consult[] said map database." Thus, the Court should adopt Harman's construction giving this limitation its plain and ordinary meaning consistent with the alleged invention actually claimed.

E. "functionally connected" in claim 1.

Harman's Proposed Construction: "connected in a way that facilitates transmission of information; this need not be a physical connection."

MIT's Proposed Construction: "connected in a way that facilitates transmission of information where said transmission of information may be bi-directional between system components; this need not be a direct physical connection."¹¹

1. The phrase "functionally connected" should be construed in accordance with its plain and ordinary meaning, and MIT's insertion of extraneous language that confuses and contradicts the entirety of claim 1 is inappropriate.

Harman's proposed construction recognizes that the phrase "functionally connected" used in various limitations of claim 1, should be construed consistently throughout the claims in accordance with its plain and ordinary meaning. MIT, however, attempts to broaden the reach of its claim language through a contrived construction of this phrase, designed to read out the very specific system architecture MIT added to claim 1 by way of amendment during prosecution to overcome the Examiner's rejection. *See* above discussion at Section D.2. Specifically, MIT asks this Court to insert the language presented in bold and underline below into the plain and ordinary construction of "functionally connected":

"connected in a way that facilitates transmission of information **where said transmission of information may be bi-directional between system components**; this need not be a **direct** physical connection."

¹¹ The differences between the parties' constructions are underlined in MIT's proposed construction.

There is no justification for interjecting this additional meaning into the construction of an otherwise clear and understandable phrase. Instead of adding clarity, this language, when read within the entire context of claim 1, impermissibly broadens the claim by eliminating or contradicting the specific connectivity/interactivity limitations set forth elsewhere in the claim.

The phrase “functionally connected” is used throughout claim 1. For example, the phrase “functionally connected” is used in the “driver input means” limitation, which was amended during prosecution to overcome the Examiner’s rejection to read as follows:

“driver input means *functionally connected* to said computing apparatus *for entering data into said computing apparatus*, said data including a desired destination.”

Ex. F at Col. 29 Lns. 65-68 (emphasis added).

If interjected into this limitation, MIT’s proposed construction (“where said transmission of information may be bi-directional between system components”) confuses the express claim language, which specifically requires transmission of data in a particular direction, namely “into said computing apparatus.” The bi-directionality proposed by MIT is both unnecessary and contradicts the rest of claim 1.¹²

Similarly, the location system limitation of claim 1 provides, in pertinent part:

a location system *functionally connected* to said computing apparatus *for accepting data from* said position sensing apparatus, [and] *for consulting said map database*

See Ex. F at Col. 30 Lns. 9-12 (emphasis added).

The location system expressly requires a particular system architecture in terms of directness (“for consulting said map database”) and directionality (“for accepting data from said position sensing apparatus.”) The extraneous language MIT proposes is designed to

¹² Harman suspects that MIT’s “bi-directionality” language is an attempt to expand the “driver input means” limitation in order to argue that it covers a system in which “data including a desired destination” is not actually input into the computing apparatus from a driver input means, but instead encompasses a more cooperative, bi-directional approach to address selection from among data that already exists within the system.

impermissibly broaden this limitation by eliminating the particular “accepting from” and “consulting said” limitations that were specifically added in response to the Examiner’s connectivity/interaction rejection. This is not correct. *See* Ex. P at 110 (“Claim 1 has been amended to more particularly point out the connections and interactions between the different elements of the invention, as required by the Examiner.”); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (“Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.”) MIT cannot recapture what it disclaimed during prosecution. Consequently, the phrase “functionally connected” is properly construed using its plain and ordinary meaning, as proposed by Harman.

F. “at the time the act is to be performed” in claim 45

Harman’s Proposed Construction: “at the time the act is to be performed” should be given its plain and ordinary meaning (no construction needed)

MIT’s Proposed Construction: “‘at the time the act is to be performed’ describes relative timing of the short description in reference to the driving act and the long description, MIT’s position is that this phrase does not require the short description to be given at the instant the act should be performed. Instead, the short description can occur in, on, or near the location on the route at which the act is to be performed or shortly before the driver is required to act.”

The parties disagree as to whether the phrase “at the time the act is to be performed” needs to be construed. Harman contends that claim 45 is readily understood and need not be construed at all. Based on the claim itself, as well as the intrinsic evidence, the phrase “at the time the act is to be performed” is understandable and should be given its plain and ordinary meaning of “at the time the act is to be performed.”

MIT proposes an elaborate construction for these common words, which are easily understood by a jury. This is entirely unnecessary and would only confuse otherwise simple matters. *See U.S. Surgical*, 103 F.3d at 1568 (holding that claim construction is required only

“when the meaning or scope of technical terms and words of art is unclear and in dispute and requires resolution to determine” the issue before the court). “At the time the act is to be performed” is not a “technical term[] of art,” and does not require elaborate interpretation. *Brown v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001). Instead, the court should give claim terms “their ordinary and customary meaning as understood by one of skill in the art.” *Phillips*, 415 F.3d at 1312-13. Perhaps no phrase is more clear and understandable to a jury as the plain English phrase: “at the time the act is to be performed.”

MIT chose the narrow language of the claim 45. MIT cannot now, in the midst of litigation, re-write this limitation under the guise of claim construction in order to fix its regrettable word choice. *See Spectrum Int’l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1379 (Fed. Cir. 1998) (“claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers.”) This is particularly true where, as here, the claim language itself is so clear.

If the Court were to adopt MIT’s proposed construction of the phrase “at the time the act is to be performed,” it would effectively read out the words “at the time” and replace them with the broader word “before.” This result would be incorrect and unjust because “[t]he public has a right to rely on the patentee’s definitive statements.” *Spectrum*, 164 F.3d at 1379 MIT cannot now change the language of the claim 45 to fit its perceived needs in this litigation. *Id.* at 1379. The court should therefore adopt Harman’s position that this phrase need not be construed.

VI. CONCLUSION

For these reasons, Harman respectfully requests that this Court adopt Harman’s proposed constructions for the disputed terms of the ’685 patent.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that this document filed through the ECF system will be sent electronically to the registered participants as identified on the Notice of Electronic Filing and paper copies will be sent to those indicated as non-registered participants on March 30, 2007.

/s/ Courtney A. Clark

Courtney A. Clark